

WHAT IS CLAIMED:

*Sub A1*

1. A silicon wafer having a B-stageable underfill material deposited on one face of the wafer, the B-stageable underfill comprising two chemical compositions, a first composition and a second composition, having curing temperatures or curing temperature ranges sufficiently separated to allow the composition with the lower curing temperature, the first composition, to cure without curing the composition with the higher curing temperature, the second composition, characterized in that the first composition has been cured and the second composition is uncured.

2. The silicon wafer according to claim 1 in which the curing temperatures of the first and second composition are separated by at least 30°C.

3. The silicon wafer according to claim 1 in which the first composition is selected from the group consisting of acrylic compounds; cycloaliphatic epoxy compounds, bismaleimide compounds; and bismaleimide compounds in combination with vinyl ether, vinyl silane, styrenic or cinnamyl compounds.

4. The silicon wafer according to claim 1 in which the second composition is an epoxy compound.

5. The silicon wafer according to claim 4 in which the second composition is an epoxy compound and an imidazole/anhydride adduct.

6. The silicon wafer according to claim 5 in which the imidazole/anhydride adduct is a complex of 1 part 1,2,4,5-benzenetetracarboxylic anhydride and 4 parts 2-phenyl-4-methylimidazole, or a complex of 1 part 1,2,4,5-benzenetetracarboxylic dianhydride and 2 parts 2-phenyl-4-methylimidazole.

7. A B-stageable underfill composition comprising two chemical compositions, a first composition and a second composition,

*Sub A2*

55b  
a2

having curing temperatures or curing temperature ranges sufficiently separated to allow the composition with the lower curing temperature, the first composition, to cure without curing the composition with the higher curing temperature, the second composition.

8. The B-stageable underfill composition according to claim 7 in which the curing temperatures of the first and second compositions are separated by at least 30°C.
9. The B-stageable underfill composition according to claim 7 in which the first composition is selected from the group consisting of acrylic compounds; cycloaliphatic epoxy compounds, bismaleimide compounds; and bismaleimide compounds in combination with vinyl ether, vinyl silane, styrenic or cinnamyl compounds.
10. The B-stageable underfill composition according to claim 7 in which the second composition is an epoxy compound.
11. The B-stageable underfill composition according to claim 10 in which the second composition is an epoxy compound with an imidazole/anhydride adduct.
12. The B-stageable underfill composition according to claim 9 in which the imidazole/anhydride adduct is a complex of 1 part 1,2,4,5-benzenetetracarboxylic anhydride and 4 parts 2-phenyl-4-methylimidazole, or a complex of 1 part 1,2,4,5-benzenetetracarboxylic dianhydride and 2 parts 2-phenyl-4-methylimidazole.